

IN THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 5, with the following rewritten paragraph:

B1  
The present invention relates to a gas generator for actuating vehicle occupant restraint devicedevices such as pretensioner belts.

Please replace the paragraph beginning at page 1, line 9, with the following rewritten paragraph:

B2  
A pretensioner belt is a vehicle occupant restraint device for detecting collision and subsequently tightening ~~fastening~~ a seat belt. For tightening ~~fastening~~ seat belts, there has been normally employed a mechanism of tightening ~~fastening~~ seat belts by gas pressure of a gas generator.

Please replace the paragraph beginning at page 1, line 23, and ending on page 2, line 8, with the following rewritten paragraph:

B3  
~~A first hollow body filled with gas generants and a holder in which an electrical ignitor is fixed in advance and a second hollow body of the electrical ignitor is projected, are prepared for this kind of gas generator. The holder is put on the first hollow body to close the opening portion thereof and fixed by a proper fixing means. In this kind of gas generator,~~  
two parts are prepared. One is a first hollow body filled with gas generants. The other is an electric ignitor fixed to a holder and shaped so as to project from the holder. It is difficult to put the holder into the first hollow body without leaving an excessive empty space at this time since the gas generants are hard solid because of the cylindrical configuration of the gas generator.

Please replace the paragraph beginning at page 3, line 21, with the following rewritten paragraph:

B4  
However, a filling cylinder needs to be newly provided in this case. As a result, in addition to ~~increase of a component count~~ an increase in the number of components, simplification of the manufacturing process cannot be expected.

Please replace the paragraph beginning at page 3, line 25, and ending on page 4, line 3, with the following rewritten paragraph:

B6  
It is an object of the present invention to provide a gas generator for actuating vehicle occupant restraint ~~device with a small component count, excellent in~~ devices having a small number of components and excellent ignitability, and being capable of being miniaturized miniaturization.

Please replace the paragraph beginning at page 4, line 10, with the following rewritten paragraph:

B6  
The present invention relates to a gas generator for actuating a vehicle occupant restraint device comprising a first hollow body with ~~a bottom and sides~~ an end and side walls, gas generants densely filled in the first hollow-body, an electric ignitor formed by housing igniting agents in a second hollow body with ~~a bottom and sides~~ an end and a side wall then closing the second hollow body with a plug, and a holder positioning the second hollow body in the center of the first hollow body while fixing the first hollow body and holding the plug of the electric ignitor.

Please replace the paragraph beginning at page 6, line 3, with the following rewritten paragraph:

B7 The conventional cup-shaped filling cylinder is not necessary, thereby providing reduction of ~~component count~~ the number of components.

Please replace the paragraph beginning at page 6, line 12, and ending on page 7, line 3, with the following rewritten paragraph:

B7 According to the second gas generator of the present invention, the gas generants are powdery or granulated. Therefore, the gas generants can be filled without leaving space and a ratio of the empty space can be easily predetermined. Because the gas generants are filled in a compressed state, the filling density is heightened and the gas generator is miniaturized. Combustion velocity can be adjusted by adjusting a filling weight and a compression height (i.e. a height of a surface formed with the filled agents). It is preferable that the average particle size of material of the powdery or granulated gas generants is adjusted so as to fall into the range of 10-300 $\mu$ m including 10 $\mu$ m and 300 $\mu$ m. It is preferable that the compression degree of the gas generants falls into the range of 30-100% including 30% and ~~100% in case that the 100%~~. The compression degree of the gas generants is regarded as 100% when the gas generants are compressed with the density equal to the true density.

Please replace the paragraph beginning at page 8, line 8, with the following rewritten paragraph:

B7 Particularly, a configuration where the spacer is located around the electric ignitor, is desirable. The electric ignitor may be formed so as to include the spacer depending on circumstances. Thereby, ignition energy is concentrated on the gas generants, and the

BS  
ignitability is maintained. The spacer remains ~~fixing~~fixed on the electric ignitor after the gas generator is actuated.

Please replace the replacement paragraph beginning at page 9, line 16, with the following rewritten paragraph:

B10  
A fifth generator of the present invention is characterized in that gas generants that are incompressible or hard to compress are filled densely in the first hollow body and a part of the full volume is filled with the spacer inserted between the outer surfaces<sup>wall</sup> of the sides of the second hollow body and the inner surfaces<sup>wall</sup> of the sides of the first hollow body, in addition to the above-mentioned characteristics of the first gas generator.

Please replace the paragraph beginning at page 9, line 23, and ending on page 10, line 6, with the following rewritten paragraph:

BH  
In the gas generator of the present invention described above, the excessive empty space in the first hollow body can be reduced, thereby ~~improving the problem for~~reducing an ignition delay of the gas generator. Further, the gas generants are prevented from being powdered by vibration of vehicles. Thus, the gas generator of the present invention is excellent in ignitability and reduced in size though it is manufactured in a manufacturing process almost the same with the conventional one.

Please replace the paragraph beginning at page 10, line 8, with the following rewritten paragraph:

BH  
FIG. 1 is a sectional view of the first embodiment [[1]] of the present invention; FIG. 2 is a sectional view of the second embodiment [[2]] of the present invention; FIG. 3 is ~~Table~~

B1/3 ~~1 showing~~ shows the relationship of the ratio of the empty space by volume and ignition delay period of the gas generator.

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Please delete the paragraph beginning at page 10, line 16, in it entirety.

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B1/3 ~~FIG. 1 is a sectional view of the embodiment 1 of the present invention. FIG. 2 is a sectional view of the embodiment 2 of the present invention.~~

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Please replace the paragraph beginning at page 11, line 12, with the following rewritten paragraph:

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B1/3 The holder 1 fixes the first hollow body 2 positioning the second hollow body 4a in the center of the first hollow body 2. Further, the holder 1 supports the plug 4c by a caulking portion 1b with an O-like ring 5 around an outer circumference of the plug 4c. The O-like ring 5 is employed for use in ~~seal~~ sealing. The holder 1 projects a part of the second hollow body 4a of the electric ignitor 4 into the first hollow body 2, and allows parts of the pins 4d to be connected to a connector (not shown).

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Please replace the paragraph beginning at page 11, line 20, with the following rewritten paragraph:

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B1/3 An insulation ring 3 is fitted to a hole 1a in back of the holder 1 to ensure insulation. The caulking portion 1b for supporting the plug 4c is inserted in the opening portion of the first hollow body 2. By the caulking portion 1c of the holder 1 on the flange 2b of the first hollow body 2, the first hollow body 2 is fixed on the holder 1 in a ~~seal~~ sealed condition.

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Please replace the replacement paragraph beginning at page 12, line 7, with the following rewritten paragraph:

B1/12  
The spacer 7 is, for example, in a cylindrical shape, where a diameter of the inner circumference thereof is substantially the same ~~with the one~~ as the diameter of the outer circumference of the second hollow body 4a and a diameter of the outer circumference thereof is substantially the same ~~with the axle~~ as the diameter of the inner ~~circumferences~~ circumference of the main portion of the first hollow body 2. The spacer 7 is inserted between the outer surfaces <sup>wall</sup> of the sides of the second hollow body 4a and the inner surfaces <sup>wall</sup> of the sides of the first hollow body 2.

Please replace the paragraph beginning at page 12, line 20, with the following rewritten paragraph:

B1/12  
In the case that the gas generants 6 are incompressible or hard to compress e.g. smokeless powder or press-formed non azide gas generants, the gas generants are densely filled in the first hollow body 2 on the <sup>end</sup> bottom side thereof. In the case that the gas generants 6 are compressible and powdery or granulated, the gas generants are densely filled in the first hollow body 2 on the bottom side thereof in a condition hardened by a compression. The dimension h in the drawing refers to a distance between the <sup>end</sup> bottom of the first hollow body 2 and the filling surface (i.e. the surface formed with filled agents).

Please replace the paragraph beginning at page 13, line 10, with the following rewritten paragraph:

B1/12  
The volume of a space, which is partitioned by an inner surface of the first hollow body 2, an outer surface of the second hollow body 4a and the holder 1 and capable of housing the gas generants, ~~is written with a word of~~ constitutes a full volume.

Please replace the paragraph beginning at page 14, line 6, with the following rewritten paragraph:

A volume of the empty space and the ratio thereof are calculated by using

B29  
volume of an empty space

$$= \text{full volume} - (\text{filling volume} + \text{volume of a spacer})$$

...(1')

ratio of an empty space by volume

$$= (\text{empty space volume} / \text{full volume}) \times 100$$

...(2)

Please replace the paragraph beginning at page 14, line 20, and ending on page 15, line 3, with the following rewritten paragraph:

B29  
Particularly, in the case that the gas generants are incompressible or hard to compress e.g. smokeless powder or press-formed non azide gas generants, the gas generants cannot be hardened into a predetermined shape by a compression so as to fit a space for housing the gas generants of the gas generator. Therefore, it is preferable to use the spacer so as not to form an excessive empty space.

Please replace the paragraph beginning at page 16, line 1, with the following rewritten paragraph:

B29  
The gas generants 6, which are compressible and powdery or granulated, are densely filled in the first hollow body 2 on the <sup>end</sup> bottom side thereof in the state hardened by a compression to have a concavity 6a to which the second hollow body 4a of the electric ignitor 4 is just fitted. The dimension H in the drawing refers to a distance between the bottom of the first hollow body 2 and the filling surface (i.e. a surface formed with the filled agents).

Please replace the paragraph beginning at page 16, line 9, with the following rewritten paragraph:

B22  
In the embodiments of the present invention, a filling volume of the gas generants 6 ~~are is~~ determined so that the ratio of an empty space, which is not filled with the gas generants 6, to the full volume is less than 20 % by volume, preferably less than 10 %.

Please replace the paragraph beginning at page 16, line 14, with the following rewritten paragraph:

B23  
In the case that the gas generants 6 are compressed in the first hollow body 2 in advance to be concave to fit the second hollow body 4a as described above, the second hollow body 4a is surrounded by the gas generants ~~only simply~~ by inserting the second hollow body 4a in the first hollow body 2 and fixing by the caulking portion 1c of the holder 1. Therefore, the inner empty space of the gas generator is reduced compared to the conventional one.

Please replace the paragraph beginning at page 16, line 22, with the following rewritten paragraph:

B24  
~~In a case that compression degree~~ The degree of compression of the gas generants in the above mentioned gas generator of the present invention is regarded as 100% when the gas generants are compressed until being to a density equal to the a true density thereof is regarded as 100 %. In the gas generator of the present invention the degree of compression ~~compression degree~~ preferably falls in a range of 30-100 %, including 30% and 100 %, so that the gas generants can be compressed into a predetermined form. Concretely, the compression degree is calculated by using



B24 compression degree [%]  
= (weight of gas generants per 1 cm<sup>3</sup> of a filling volume / true density of gas generants) X 100

...(4)

Please replace the paragraph beginning at page 17, line 14, with the following rewritten paragraph:

B25 In the gas generator shown in FIG. 2, the gas generants containing 33.8 % by weight of 5-aminotetrazole, 30.5 % by weight of ammonium perchlorate, 31.0 % by weight of strontium nitrate, and 4.7 % by weight of synthetic hydrotalcite were employed. The true density was 2.18 g/cm<sup>3</sup>. The gas generants were powdery, ~~of which~~ with a particle mean diameter ~~is of~~ 50 μm, and compressible.

Please replace the paragraph beginning at page 17, line 21, and ending on page 18, line 4, with the following rewritten paragraph:

B26 ~~A gas~~ Gas generants weighing ~~of~~ 1.9 g were weighed and filled in the first hollow body. Then, the gas generants were compressed for forming a concavity until the filling volume was 2.11 cm<sup>3</sup>. The full volume of the gas generator is 2.3 cm<sup>3</sup>. The empty space calculated by the equation is 0.19 cm<sup>3</sup> and the ratio is 8.3 % by volume. The weight of the gas generants per 1 cm<sup>3</sup> of the filling volume is 0.9 g and the compression degree is 41.3 %.

Please replace the paragraph beginning at page 18, line 5, with the following rewritten paragraph:

B27 FIG. 3 shows the ratio of the empty space by volume and ignition delay period of the gas generator obtained in this way as Table 1 Example 1.

[Example 2]

Please replace the paragraph beginning at page 18, line 9, with the following rewritten paragraph:

B28 In the gas generator shown in FIG. 2, the same gas generants as those used in the Example 1 were employed. The true density was  $2.18 \text{ g/cm}^3$ . The gas generants were powdery, ~~of which~~ with a particle mean diameter of ~~is~~  $50 \mu\text{m}$ , and compressible.

Please replace the paragraph beginning at page 18, line 13, with the following rewritten paragraph:

B29 The ~~gas~~ Gas generants weighing ~~of~~  $1.7 \text{ g}$  were weighed and filled in the first hollow body. Then, the gas generants were compressed for forming a concavity until the filling volume was  $1.89 \text{ cm}^3$ . The full volume of the gas generator is  $2.3 \text{ cm}^3$ . The empty space calculated by the equation is ~~0.19~~ 0.41  $\text{cm}^3$  and the ratio is 17.8 % by volume. The weight of the gas generants per  $1 \text{ cm}^3$  of the filling volume is  $0.9 \text{ g}$  and the compression degree is 41.3 %.

Please replace the paragraph beginning at page 18, line 21, with the following rewritten paragraph:

B30 FIG. 3 shows the ratio of the empty space by volume and ignition delay period of the gas generator obtained in this way as Table 1 Example 2.

[Example 3]

Please replace the paragraph beginning at page 19, line 3, with the following rewritten paragraph:

B31  
The same gas generants as those used in the Example 1 were employed. The true density was  $2.18 \text{ g/cm}^3$ . The gas generants were powdery, ~~of which with a particle mean diameter of is~~  $50 \mu\text{m}$ , and compressible. ~~The gas~~ Gas generants weighing of  $1.5 \text{ g}$  were weighed and filled in the first hollow body. Then, the gas generants were compressed until the filling volume was  $1.67 \text{ cm}^3$ . The full volume of the gas generator is  $2.3 \text{ cm}^3$ . The empty space calculated by the equation is  $0.23 \text{ cm}^3$  and the ratio is  $10.0 \%$  by volume. The weight of the gas generants per  $1 \text{ cm}^3$  of the filling volume is  $0.9 \text{ g}$  and the compression degree is  $41.3 \%$ .

Please replace the paragraph beginning at page 19, line 13, with the following rewritten paragraph:

B32  
FIG. 3 shows the ratio of the empty space by volume and ignition delay period of the gas generator obtained in ~~this way as Table 1~~ Example 3.

[Example 4]

Please replace the paragraph beginning at page 19, line 20, with the following rewritten paragraph:

B33  
The gas generants containing  $98.0 \%$  by weight of nitrocellulose,  $1.0 \%$  by weight of diphenylamine, and  $1.0 \%$  by weight of potassium sulfate were employed. The gas generants were incompressible, ~~of which particle is~~, with particles press-formed into a cylindrical shape having  ~~$0.7 \text{ mm}$  of an outer diameter of  $0.7 \text{ mm}$ ,  $0.2 \text{ mm}$  of an inner diameter of  $0.2 \text{ mm}$ , and  $1.3 \text{ mm}$  of a height~~ a height of  $1.3 \text{ mm}$ .

Please replace the paragraph beginning at page 20, line 1, with the following rewritten paragraph:

B34  
The gas-~~Gas~~ generants weighing ~~of~~ 1.3 g were weighed and filled in the first hollow body. Then the gas generants were filled densely without compression until the filling volume was 1.73 cm<sup>3</sup>. The full volume of the gas generator is 2.3 cm<sup>3</sup>. The empty space calculated by the equation is 0.17 and the ratio is 7.4 % by volume. The weight of the gas generants per 1 cm<sup>3</sup> of the filling volume is 0.75 g.

Please replace the paragraph beginning at page 20, line 8, with the following rewritten paragraph:

B35  
FIG. 3 shows the ratio of the empty space by volume and ignition delay period of the gas generator obtained in ~~this way as Table 1~~ Example 4.

[Comparative Example 1]

Please replace the paragraph beginning at page 20, line 12, with the following rewritten paragraph:

B36  
The gas generator in the Comparative Example 1 is equivalent to the gas generator shown in FIG. 1 except the ~~spacer, and an example of the gas generator where~~ spacer is not included, and the ratio of the empty space by volume is no less than 20 %.

Please replace the paragraph beginning at page 20, line 16, with the following rewritten paragraph:

B37  
The same gas generants as those used in the Example 1 were employed. The true density was 2.18 g/ cm<sup>3</sup>. The gas generants were powdery, ~~of which~~ with a particle mean diameter ~~of is~~ 50 μm, and compressible.

Please replace the paragraph beginning at page 20, line 20, and ending on page 21, line 1, with the following rewritten paragraph:

B38  
~~The gas~~ Gas generants weighing of 1.5 g were weighed and filled in the first hollow body. Then, the gas generants were compressed until the filling volume was 1.67 cm<sup>3</sup>. The full volume of the gas generator is 2.3 cm<sup>3</sup>. The empty space calculated by the equation is 0.63 cm<sup>3</sup> and the ratio is 27.4 % by volume. The weight of the gas generants per 1 cm<sup>3</sup> of the filling volume is 0.9 g and the compression degree is 41.3 %.

Please replace the paragraph beginning at page 21, line 2, with the following rewritten paragraph:

B39  
FIG. 3 shows the ratio of the empty space by volume and ignition delay period of the gas generator obtained in ~~this way as Table 1~~ Comparative Example 1.

Please replace the paragraph beginning at page 21, line 5, with the following rewritten paragraph:

B40  
Generally, a permissible ignition delay period ~~is in~~ seat belt pretensioners for automobiles is within 2 ms. When a delay more than 2 ms occurs, an occupant restraint performance cannot be shown sufficiently.

Please replace the paragraph beginning at page 21, line 9, with the following rewritten paragraph:

B41  
~~According to Table 1, ignition delay period in Example~~ FIG. 3, the ignition delay periods in Examples 1, 2, 3, 4 are short being less than 2 ms. The ignition delay period in Comparative Example 1 is substantially longer than 2 ms compared to those in Examples 1-4.

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Accordingly, it is shown that the ratio of the excessive space ~~i.e.~~i.e., the empty space in the first hollow body causes a considerable ignition delay of the gas generator.